ENCOURAGING WOMEN TO JOIN STEM: A TRANSMEDIA RECRUITMENT CAMPAIGN

A CREATIVE PROJECT

SUMBITTED TO THE GRADUATE SCHOOL

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

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MASTER OF ARTS

BY

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Chapter 1: Introduction

In 2016, Accenture found that as many as 2.4 million science, technology, engineering, and math (STEM) jobs might be left unfilled in the United States by 2018. Having this many unfilled positions causes delays in production due to limits in worker resources. This has led industry leaders to research methods for reducing these positions. One proposed way to address this shortage is by increasing the representation of women in STEM. Sax et al. found that (2015) "the majority of college graduates (57%) and master's level graduates (60%) are women, and nearly half (48%) of this country's workforce is comprised of women. Women account for about only 20% of the bachelor's degrees in engineering, computer science, and physics. Regardless of the specific area of STEM, only 25% of these positions are held by women" (p.5). Women are significantly underrepresented in STEM, which requires additional recruitment work to overcome industry perceptions.

Research has also suggested that women do not perceive STEM programs as effectively aligned with their desires. Young women want to have careers that allow them to feel they are providing a service that "makes a difference." Linda et al. states (2016), "Interestingly, although STEM girls are motivated by philanthropic desires, choosing a STEM career which can realize those desires still isn't coming out on top" (p.18). They also found that girls show "interests in facets of STEM, including the process, the excitement of solving puzzles and problems, and the idea that STEM could allow girls to do something new and innovative in a career" (p.10). Young women possess the drive and ability for problem solving and are motivated to service, yet many do not realize that STEM is a means to accomplish those goals.

To address this problem space, a partnership was formed with the Center for Information and Communication Sciences (CICS) at Ball State University. Associate Director Kirsten Smith

has indicated that this STEM-based program struggles to attract women to its master's degree program, which prepares students to solve information technology problems through a combination of technology, business, leadership and communication courses. In addition to course work, these objectives are met through immersive learning projects, research opportunities, program-led social learning, and professional development opportunities. CICS has a 90+% placement rate for its graduates and has made efforts to address the women in technology need through the creation of Women Working in Technology (WWiT), an organization that promotes technology education and careers for girls in high school and beyond. WWiT sponsors three main types of activities: conferences, IT workshop series, and Luncheons and Learning sessions.

This project employed a survey, a focus group, and a comprehensive social media content analysis, to create a replicable, transmedia recruitment plan that attracts women to the CICS program. A transmedia storytelling plan was created based on the data collected. Transmedia storytelling engages audience members in single, unified narratives and experiences through different platforms. These experiences can exist on either digital or physical mediums.

This project has three specific aims: 1) discover possible methods of recruitment that relate STEM programs to common values women often express, including philanthropic and/or altruistic pursuits; 2) engage young women in transmedia experiences that encourage them to consider possible STEM career paths; 3) create a recruitment tool for CICS and WWiT that incorporates results from empathy research on these topics, as well as transmedia content. To achieve these goals, empathy research was conducted with core stakeholders, including members of WWiT, and CICS students. Then, a transmedia recruiting tool inspired by the results of the research and brainstorming activities was developed. The short-term effect will be an increase in

females in the next cohort for the Information and Communication Science graduate program. Additionally, a long-term effect will likely be a sustained increase in recruitment of women into STEM fields. On a larger scale, this campaign will represent a replicable plan for mitigating the major barriers that stop women from entering STEM programs.

This project was guided by the following questions: 1) How might we recruit more women into STEM programs such as CICS? 2) How might we create a replicable recruitment transmedia plan that encourages women into STEM?

Chapter 2: Literature Review

Many factors have led to limited representation of women in science, technology, engineering, and mathematics (STEM). This literature review draws from research in the following interrelated fields: women in STEM, masculine culture, stereotypes, gender bias, limited early exposure, low mathematical confidence, discouragement, and current STEM recruitment efforts.

Women in STEM

The United States faces economic pressure to create new, innovative products and services that improve society. These innovative products and services can range from new communication experiences to ride sharing to interactive learning tools. With the rise of economic participation from developing countries, it has become imperative that the United States increases its competitive advantage. A report titled *Cracking The Gender Code: Get 3x More Women in Computing* recommends the creation of a new approach to recruiting women. If the approach was successful, potentially 3.9 million women could be in computer related jobs by 2025. Women's representation would change from 24% to 39% in the computing workforce and generate an additional $299 billion in cumulative earnings (Accenture, 2017). It is imperative to improve recruitment efforts to not only increase economic growth, but also overcome the developing economic crisis caused by the imbalance of available STEM jobs and qualified talent. Smith explains (2011), "the under-representation of women in science, engineering and technology threatens, above all, our global competitiveness. It is an issue for society, for organisations, for employers and for the individual" (p.993). This concern has led many to propose a multitude of solutions, each trying to convince both girls and women of their

importance to STEM and their abilities to perform all the required tasks. With these diverse efforts, it is difficult for a coordinated, effective recruitment plan to be developed.

Many papers have been published on the possible factors for why women are hesitant to join STEM fields. Research indicates it is due to perceived gender biases, discrimination, and limited opportunity. Furthermore, there exists an insufficient number of women mentors and role models, which also contributes to the difficulty of recruiting women. (Beede et al., 2011; Jiang, Cheryan, Ziegler & Montoya, 2016). A successful recruitment plan would address these factors.

Masculine Culture

Hofstede (2001) explains that "masculinity stands for a society in which social gender roles are clearly distinct: Men are supposed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life" (p.297). When it comes to masculine culture, the environment is focused, competitive, and hostile. When women enter this culture, they face the "odd girl out" phenomenon, in which gaining acceptance in the workplace can be a herculean task. This phenomenon can cause stress, frustration, and burnout for females who are constantly competing with their male coworkers. There are two main stereotypes found in masculine cultures.

The first type of stereotype relates to the workplace and typical worker. Using computer science as the example, most of the stereotypes are unflattering. Beyer, et al. (2003) found that women "are perceived to be intelligent but deficient in interpersonal skills. This has been termed the 'computer nerd syndrome' or 'geek mythology'. These perceptions of CS majors conflict more with the gender roles of females than of males, because women have a stronger interpersonal orientation than men" (p.49). When undergraduate students were asked what

computer scientists look like, the typical description was male and were often described as unattractive, thin, plain, and wore glasses. These males were "born coding" or "dreamed in code." Undergraduates also remarked that people who were computer scientists had an "obsession with machines" (Mercier et al., 2006; Beyer et al., 2003). This stereotype is problematic, as it illustrates that women are not identified with STEM. In addition, with this extreme stereotype, STEM is unappealing to women.

The second stereotype involves the biases women face due to their perceived abilities. Xu (2008) wrote that structural-related gender bias means "... that women have a smaller chance of being hired; the small group of women who start faculty careers in STEM suffer isolation, marginalization, stereotyping, insufficient support, delay in advancement, and other adversity at work" (p.608). Gender biases are often reaffirmed based on societal beliefs. Mathematics and science are often considered part of the male domain, whereas language and humanities are considered to be female domains (Sax et. al., 2015). Gender biases start at a young age, when children are subjected to subliminal messages about their potential job roles. Girls are encouraged to take careers that are people oriented, where they are in a helping role. Boys on the other hand, are encouraged to have careers that involves problem solving. These messages come from parents, teachers, peers, and media. Sauceman and Vasquez (2014) found that "young children perceive messages about social roles, their own competence, and possibilities for their future, both from overt instruction and from subtle, even unconscious, influences. These lessons by themselves will not determine a child's ultimate career, but they help to establish the context in which later messages will be interpreted" (p.47). There is also a need for more resources and positive, non-stereotypical role models dedicated towards encouraging women to join STEM.

Role Models

It is important for women to see different types of people who are successful in STEM. One tool that encourages women is to provide role models who can support them. According to Milgram (2011), "women and girls need to see female role models in the workplace that look like them— over and over and over again. They need to receive the message that women can work in STEM careers and be successful and fulfilled in their work life while still having a personal life, and they need to receive this message repeatedly" (p5). It is important for males to be allies too. Having male role models helps eliminate the "odd girl out" phenomenon by having men actively engage and support female coworkers.

Role models can also increase recruitment by raising awareness about the potential careers of STEM. Milgram (2011) also found that "the best way to attract girls to STEM classes is to emphasize how the program helps others, and also focus on teamwork and collaboration, another area that research shows is appealing to women" (p.7). Women desire to change their worlds by choosing careers that give them the ability to make a difference. Women also seek careers that offers career options, security, work/life balance, and support. Without support, women can feel pressured into leaving their fields (Buschor et al., 2014). STEM role models facilitate the connection between the theoretical and real-world applications, which helps build confidence, boost learning outcomes, and encourages continued STEM education.

Limited Early Exposure

To attract more women to STEM, it is important to expose them at young ages. Girls want to understand processes, engage in problem solving, participate in activities, and ask clarifying questions. Girls also have philanthropic desires, which causes them to choose careers

they perceive will “make a difference in the world.” Unfortunately, they do not see STEM careers as fulfilling this goal. (Sax et al., 2015). This is the result of feelings caused by long-term gender bias, unsettling environment, and limited support. It is important for women to understand that they can be successful in their professional endeavors and have freedom within their personal lives.

An additional problem is that women do not have exposure to higher-level mathematics and when they do; their self-esteem is lower compared to their male counterparts. The U.S. President’s Council of Advisors on Science and Technology found that mathematical impressions and confidence affected both teachers and students. The Council (2012) stated that “reducing or eliminating the mathematics-preparation gap is one of the most urgent challenges—and promising opportunities—in preparing the workforce of the 21st century” (vi). This leads to the challenge of women overcoming their limited mathematical confidence. Women are 1.5 times more likely to leave the STEM pipeline after taking Calculus I compared to men. They instead switch majors based on the success and enjoyment of other courses taken in the same time period (Ellis, Fosdick & Rasmussen, 2016). Ellis et al. writes, “if women persisted in STEM at the same rate as men starting in Calculus I, women would make up as much as 37% of the STEM workforce rather than the current 25%” (p.10-11). To help women develop confidence, mentors and counselors must support them in times of self-doubt. Bystydzieński et al. stated (2015), “These conditions require counseling, support services, and programmatic efforts that can identify and distinguish the particular obstacles that young women face and address them accordingly” (p.94). Without support and guidance, women will not acquire mathematical confidence and will not continue in STEM fields.

From a young age, women often face discouragement from engaging in STEM. This message comes from toys, media (movies, tv, games), books, and role models. Girls hear that they are not qualified for STEM activities and careers because they are incapable of being interested in the STEM principles that are required to participate. In contrast, boys hear that they possess a natural talent and proclivity toward STEM activities. This difference in messaging often causes girls to not identify with STEM fields (Saucerman & Vasquez, 2014). Due to the lack of encouragement to take STEM classes in high school, girls are often inadequately prepared to enter STEM majors in college. In fact, according to Shapiro and Sax, the difficulties women face are, in part, due to limited exposure to STEM. "Women who do not take the math and science courses needed to access a career in science, math, and engineering are often unable to stay in the science/mathematics pipeline" (p.7). To keep women in STEM, it is important to encourage them and provide opportunities that keep them on track from a young age.

Current Methods of Recruitment

To successfully recruit women, it is important to understand the audience's needs. Sax et al. (2015) note that "a one-size-fits-all" approach to STEM recruitment will not be successful. Rather, efforts to diversify STEM—both in research and in practice—need to be approached at the field level in order to best understand what attracts women and men to a particular subfield of STEM" (p. 19). When looking at different methods of recruitment, a difference arises from ages. Most marketing is directed towards young girls with little addressing women.

Many organizations have attempted to increase the number of girls interested in STEM fields. For example, Microsoft's #MakeWhatsNext campaign intends to raise awareness about the causes that make girls leave STEM. The website is focused on recruiting role models for

girls to engage them in STEM principles. Additionally, Microsoft partnered with code.org to create coding games that engage young girls. In one game, characters from the Disney movie *Moana* teach programming with visual code. By using familiar characters and easy commands, girls are able to understand the basic principles of computer languages. The goal is to encourage participants on the website to practice coding for one hour. One challenge of the code.org campaign is reaching the audience. Since the website is targeting elementary students, it is hard to get information about it to the intended audience. Barriers include a lack of awareness of the games and users must actively search for coding activities. Likewise, Million Women Mentors is engaged in another effort to increase recruitment and retention of women in STEM by partnering professionals with girls in high school, college students, and early career professionals. Another example is the Dot Diva campaign created by Yahoo! CEO Marissa Mayer to showcase the ways computer scientists help society.

Recruitment efforts towards women are limited. These efforts are more directed toward conferences and supporting women already in STEM. Each branch of STEM has its own organizations. For computer science, the main organizations are the Anita Borg Institute for Women and Technology, TechWomen/IIE, National Center for Women & Information Technology (NCWIT), and Women in Technology International (WITI). The Anita Borg Institute for Women and Technology hosts the annual summit, The Grace Hopper Celebration of Women in Computing. The U.S. Department of State's Bureau of Educational and Cultural Affairs (ECA) created the TechWomen/IIE TechWomen initiative. It aims to connect emerging female technology leaders from the Middle East and North Africa to Americans. NCWIT goal is to increase women's participation in technology and computing. It is a support group located in

more than 350 organizations. WITI provides women in technology access and support to other women in the technology profession.

Chapter 3: Project Design

This project design chronicles the process implemented to develop a replicable, transmedia recruitment plan that encourages an increase in female applicants to the master's degree in Information and Communication Sciences (CICS) at Ball State University. This project took an audience-centered approach and required three phases: empathy research, data analysis, and project development.

Empathy Research

During the empathy research phase, three forms of data were collected. First, a focus group with 12 WWiT participants met to discuss barriers that prevent women from entering STEM fields. Second, 34 CICS students were surveyed about respondents' backgrounds, perceptions of the CICS program, the existing CICS recruitment plan, and participation in WWiT. Finally, a comprehensive social media content analysis was completed of both the CICS and WWiT's Facebook, Twitter, and Instagram pages. The ultimate goals for these activities was to understand the attitudes surrounding women in STEM and methods of improving recruitment using transmedia storytelling.

Data Analysis

To begin synthesizing the collected data, a qualitative process of coding was used to understand, label, and organize the research. Coding allowed the researcher to create an affinity diagram that featured categories and subcategories to extract key themes from the data. The analysis from the survey, social media content, and focus group activities inspired the development of a transmedia storytelling campaign.

Key Themes

After analyzing the empathy research methods, the following three key themes emerged: 1) constant social media, 2) live events as a tool for recruitment, 3) specific messaging about the culture of WWiT and CICS. From the survey, the CICS students responded that the following were their preference in being recruited ranked from most wanted to least: events, social media, flyers, and brochures. Social media was broken down further by most influential: Facebook, Instagram, YouTube, other, Twitter, and Snapchat. Also listed were LinkedIn and website blog. From analyzing all the empathy research, the following themes emerged: conference, promote, success, events, alumni, inform, and support. The theme of conference represents all the posts about the annual WWiT conference, which includes promotional posts, speaker information, and session summaries. The promote theme is posts that showcases the ways WWiT tries to bridge the gender gap. The success theme provides a platform to showcase the ways CICS students are being successful in the program. The events theme discusses when WWiT hosts events for potential and current CICS students. Alumni theme showcases the when CICS alumni are being successful in their careers. The theme of inform provides testimonials and gives detailed information about CICS. The final theme is support, which shares curated content that showcases support for women in STEM.

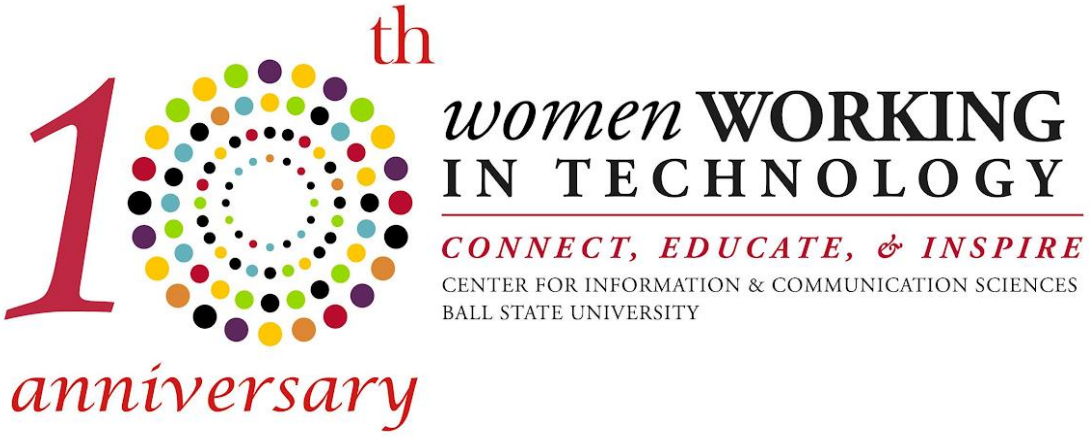
Development

After examining all the gathered, the transmedia recruitment plan was created. This plan provides a framework for the WWiT to use the next year for recruiting women into the CICS program. It outlined the following: 1) central and key messaging; 2) recruitment goals, objectives, and strategies; and 3) specific social media and live event strategies. This transmedia

recruitment plan provides a robust framework for how WWiT can leverage their social media presence and how to strategically use live events to recruit more women into STEM.

Chapter 4: Body of Work

Utilizing an empathy research analysis of a focus group, a survey, and social media content, a robust transmedia recruitment plan was developed. This plan was designed to assist WWiT in its efforts to increase the number of women who apply to the CICS graduate degree program by providing a guide to direct their interactions with potential students. This plan was divided into eight categories: partner, inquiry, vision, recruitment timeline, potential candidates personas, social media strategies, live event strategies, and future considerations. The rest of this chapter is devoted to the transmedia recruitment plan.



Transmedia Recruitment Plan

Prepared by Kylie Leonard

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Partner

In 2008, the Center for Information and Communication Sciences (CICS) developed the Women Working in Technology (WWiT) initiative. WWiT was created to promote and empower women in technology by connecting, educating, and encouraging women to achieve their educational and professional goals. WWiT engages in three main efforts: 1) community outreach for middle and high school girls, 2) hosting an annual professional development conference, and 3) sponsoring monthly educational sessions aimed at undergraduate students. This group is led by Kirsten Smith, the Labs Manager, Technology Officer, and Associate Director of CICS.

Inquiry

The primary goal for this project is to create a transmedia recruitment plan to increase the number of women who apply to the CICS graduate degree program. Several strategies were employed to better understand the necessary requirements for such a plan, including a focus group, a survey, and a comprehensive social media content analysis of WWiT and CICS's Facebook, Twitter, and Instagram pages. These strategies yielded multiple informative data points that were coded to illuminate key themes that could be used to influence the development of improved recruiting strategies. This inquiry was driven by two guiding questions:

1. How might we recruit more women into STEM programs like CICS?
2. How might we create a replicable transmedia recruitment plan that encourages women to pursue STEM graduate programs and fields?

The following sections provides details about the common themes that emerged from this inquiry.

Focus Group

On October 27, 2017, a focus group with 12 Women Working in Technology participants was conducted. Four goals drove this research: 1) understand how to encourage females into CICS, 2) how to increase confidence in women, 3) how to apply STEM problems to interest women, 4) and how to make STEM more appealing through cross-platform recruitment campaign. The following themes were revealed:

How might we encourage females to join CICS?

1. **Benefits**: Display the benefits of working in technology;
2. **Group**: Emphasize the group activities and team projects that occur within CICS;
3. **Recruitment**: Use social media to showcase female success stories, which draw attention to the possibilities women have with a technology degree.

How might we help women have more confidence?

1. **Advocating**: Promote women in leadership roles and the opportunities available to women who enter STEM fields;
2. **Company Mentor**: Have both females and males serve as mentors when women enter a company;
3. **Faces of Women**: Share successful stories and testimonials of women from many backgrounds (tech and non-tech degrees), races, and skill sets;
4. **You Can Do It!**: Reinforce the message that women are capable of being successful in tech fields.

How might we apply STEM to problems that interest women?

1. **Career Opportunities**: Inform women about the potential options that are available to them professionally;
2. **How you can help?**: Showcase the how STEM gives women the ability to make a positive change in society;
3. **Significance**: Display the effect technology has made on solving problems.

How might we make STEM more appealing through cross-platform recruitment?

1. **Showcase**: Feature women who are successful in their careers. Use testimonials, interviews, and personal stories to share women's experiences working in technology;

2. **Tools**: Use pictures, videos, and blog posts to increase appeal and knowledge about women in technology;
3. **Support**: Include continuous "you belong" messaging in technology fields;
4. **Engagement**: Highlighted the available support systems for women in tech and connect young women to professionals.

Survey

For two weeks in February, a survey was made available to CICS students to solicit specific feedback that could direct the development of a transmedia recruitment plan. At the end of this two-week period, 34 participants had responded, with an equal number of females and males. The following section details the results from questions about respondents' backgrounds, perceptions of the CICS program, the existing CICS recruitment plan, and participation in WWiT.

Background

Twenty-six of 34 respondents reported that they had a non-STEM undergraduate degree. The reasons these students listed for enrolling in a STEM graduate program were:

- New opportunities
- Increases in salary
- Felt unprepared for the job market
- Previous interest in technology
- References

Additionally, 25 of 34 respondents reported they received encouragement from family, parents, friends, significant others, peers, teachers, and others. Most respondents reported that teachers were the most encouraging group of people in their lives.

CICS

When asked how respondents discovered the CICS program, only four answers emerged: CICS alumni reference, researching potential master's programs, they were recruited by a CICS representative and recruiting by the Ball State University graduate school. More than half of the respondents indicated they found CICS through an alumni reference.

Respondents also reported that the main factors that influenced their decision to apply to the CICS program were:

- Job placement rate
- Career flexibility
- Diverse backgrounds
- Project based
- Eleven-month program
- Graduate Assistant positions
- Active alumni base
- Great faculty

Recruitment to Program

Fifteen respondents reported that they were recruited to the program either by then-CICS director Dr. Steve Jones, alumni, other professors in CICS, or by the Ball State Graduate school coordinator. When asked what media they prefer when receiving information about the program, the following were ranked from most wanted to least: events, social media, flyers, and brochures. Furthermore, the following social media platforms were listed as most influential: Facebook, Instagram, YouTube, other, Twitter, and Snapchat. LinkedIn and website blog were also listed.

Participation in WWiT

Of the 34 participants surveyed, only 12 of the 32 who were familiar with WWiT actually participated in the organization. The five reasons cited by the remaining 20 for why they did not participate were:

- Too busy
- Too busy but attend the conference
- Work conflict
- Unknown meeting time
- Need more information

Social Media Content Analysis

This content analysis evaluated all posts from January 1, 2017 to December 31, 2017. Using the qualitative method of coding, key themes were revealed.

CICS

The first analysis of the social media, from the Center for Information and Communication Sciences, included 56 Facebook posts, 32 Twitter posts, and 13 Instagram posts. From this, the following themes were noted:

1. **Events**: Posts that feature the events that CICS students attend;
2. **WWiT Conference**: Posts that referenced, or promoted the annual WWiT conference;
3. **Alumni**: Posts that showcase the success of CICS alumni;
4. **Promotions**: Posts that promote the CICS program;
5. **Testimonials**: Posts from current graduate assistantship students that discussed their experiences with CICS;
6. **Recruitment**: Posts to recruit potential students to the CICS;
7. **Successes**: Posts that highlighted the success of the current students.

WWiT

The second analysis of the social media, from Women Working in Technology, included 91 Facebook posts, 122 Twitter posts, and 40 Instagram posts. From this, the following themes were identified:

1. **Support**: Curated posts that expressed support for all women in technology;
2. **WWiT Conference**: Posts that referenced the WWiT conference;
3. **Events**: Posts about the events that CICS students attended;
4. **Alumni**: Posts that featured the success of CICS alumni;
5. **Promotional**: Posts that promoted CICS;
6. **Successes**: Posts that highlighted the success of the current students.

Vision

Transmedia storytelling is the process of using distributed narratives to tell a collective story over digital and physical platforms. The goal of this transmedia recruitment tool is to increase the number of female applicants to the CICS program by emphasizing the value women bring to STEM and the importance of actively recruiting them into the pipeline. Specifically, the plan will:

- Provide support for women working in technology.
- Connect current women with women mentors in the field
- Encourage female applicants to the Information and Communication Science graduate program.

Central Message:

Women are capable of being successful in technology. CICS and WWiT will support their development as a blended business and technology leader.

Key Messages:

1. **Diversity:** Showcase all the undergraduate majors that are currently within CICS;
2. **An 11 month program:** Reinforce that this is a Master's Degree program, yet only requires leaving their industry for 11 months;
3. **Project based:** Display the project-based learning model that CICS incorporates;
4. **Graduate Assistantships:** Explain the financial value of a graduate assistantship;
5. **Job Opportunities Post Graduation:** Feature the 90% job placement rate and explain the different careers and companies where students can work;
6. **Strong Alumni Base:** Advertise the active alumni who give back to CICS through workshops, mentoring, and job recommendations.

Goals:

Increase Female Applications by 25%	Increase Website participation by 40%	Increase Facebook Followers by 40%

Increase Twitter Followers by 40%	Increase WWiT Followers by 40%	Create a YouTube presence

Recruitment Timeline

While recruitment requires an active, year-round approach, the following guidelines were created based on the survey, content analysis, and an interview with Dr. Steven Jones. The year was divided into four recruiting quarters, each with strategies to implement.

Quarter 1:
Dates: July - September

Actions:
- Initiate social media effort
- Recruit current students to WWiT

Quarter 2:
Dates: October -December

Actions:
- Initiate live events effort
- Showcase current students' activities and class projects
- Begin push to recruit the next cohort

Quarter 3:
Dates: January- March

Actions:
- Share experiences, and testimonies of current students
- Increase promotional efforts for the WWiT conference

Quarter 4:
Dates: April - June

Actions:
- Initiate promotional effort for job recruitment and potential careers

- Increase alumni features

Potential Candidate Personas

Based on the survey, the following personas were built to highlight the common characteristics of students in CICS. Identifying and understanding their target audience allows recruiters to tailor the strategies and tactics used to enlist potential candidates.

Figure 1: Persona 1 of a potential student

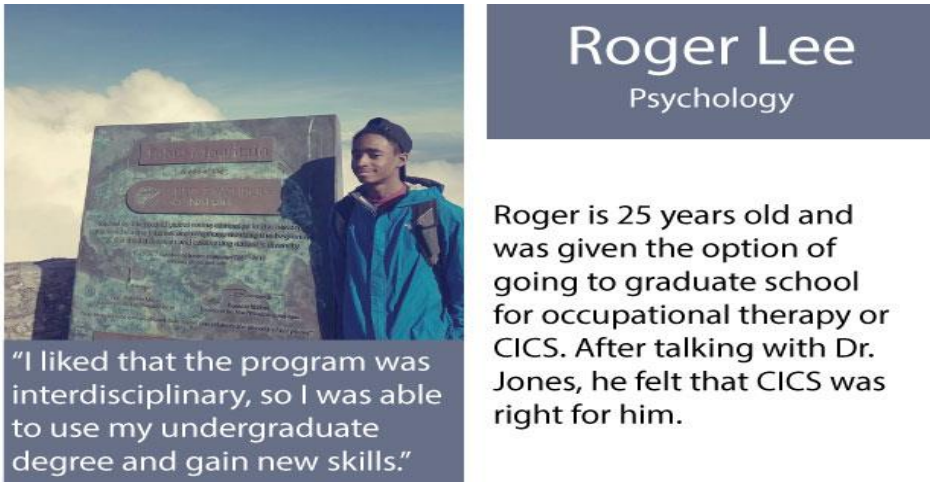

Figure 2: Persona 2 of a potential student

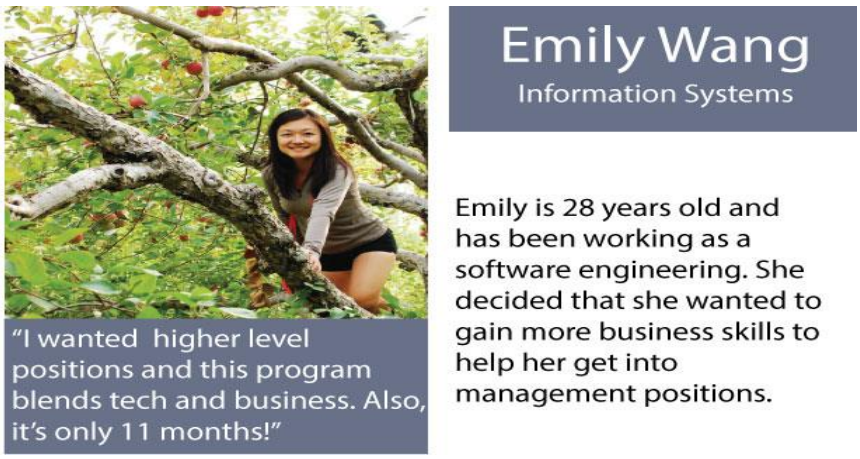

Figure 3: Persona 3 of a potential student

Figure 4: Persona 4 of a potential student

Social Media Strategies

In the survey, which allowed for multiple choices, over 58% of responses listed social media as a potential recruitment tool. Utilizing the responses of the focus group, survey, and social media content analysis, the recommendations are:

- **Brand Personality Message**: "We care about supporting women in their technology career pursuits."
- **Content**: Polls, Special Interest Stories, Curated Content
- **Voice**: Trusted experts who understand and advocate for women in technology and leadership roles.

Social Media Platforms:

Research shows that when creating a social media recruitment plan, determining the time as well as the theme is crucial to success. This calendar defines the medium, the theme and the times to post each day.

	SU	M	T	W	R	F	SA
Theme	Conference	Promote	Success	Events	Alumni	Inform	Support
	3PM	1PM	1PM	3PM	1PM	3PM	1PM
	1PM	12PM 5PM	12 PM 5PM	12PM 5PM	12PM 5PM	12PM 5PM	12PM
	1PM	1PM	2PM	5PM	1PM	5PM	5PM
		11 AM			2PM		
		11 AM			11 AM		

Figure 5: Calendar of when and what to post on each medium

Seven themes were developed as a result of the focus group, the survey, and the social media content analysis: *conference*, *promotion*, *success*, *events*, *alumni*, *inform*, and *support*. Each theme includes a summary and a social media example from either Facebook, Twitter, or Instagram.

Theme 1 – Conference: This theme includes a dedicated time to post about the WWiT Conference. Currently, the WWiT organizers post every day for nine months leading up to the conference. Oversaturating a social media platform with posts that are too similar can cause the audience to disengage. A more effective approach includes the following steps:

- A weekly conference post should appear every Sunday.
- One follow-up post may then be published later in the week to reinforce the first.
- See Figure 6 for an example.

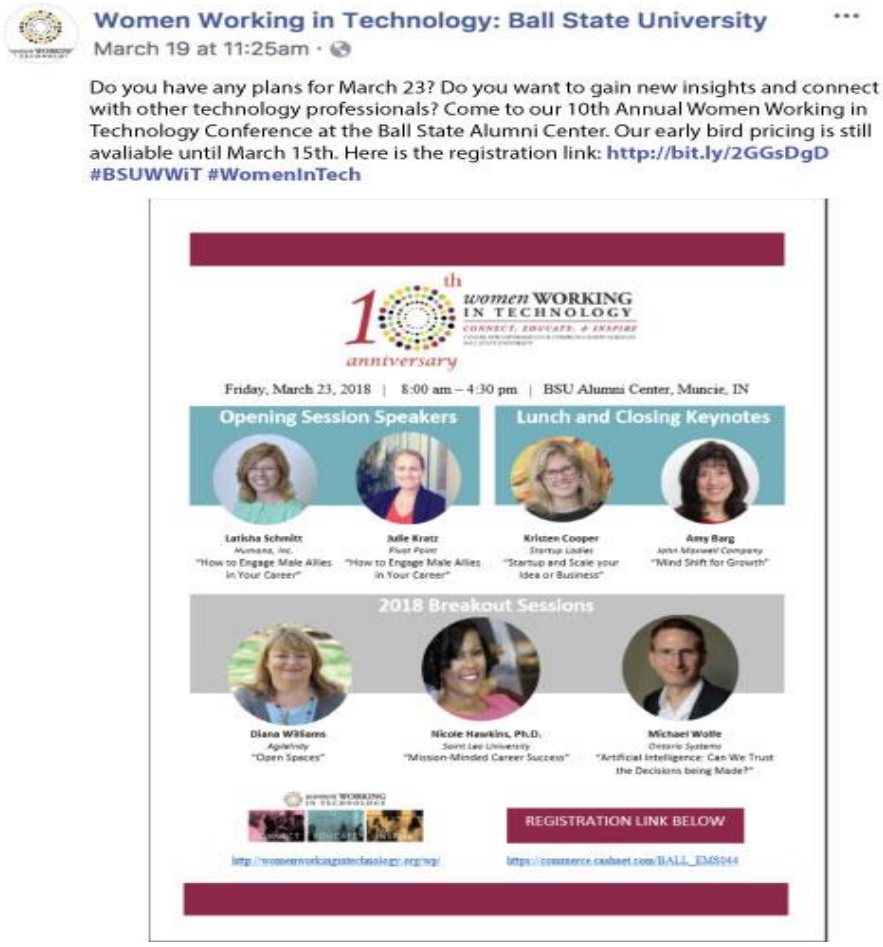

Figure 6. Example Facebook post for the Conference theme.

Theme 2 - Promotion: Used to emphasize WWiT's attempts to improve the ratio of women and girls in technology. Currently, WWiT has limited posts about their effort to usher these groups into the fold. A more effective approach includes:

- A weekly promotional post appearing every Monday.
- See Figure 7 for an example.

Figure 7: Example Facebook post for the Promote theme.

Theme 3 - Success: These posts would showcase WWiT or CICS students' accomplishments. Currently, WWiT has no posts about their students' achievements. A more effective approach would include:

- A success post should appear every Tuesday.
- See Figure 8 for an example.

Figure 8: Example Twitter post for the Success theme.

Theme 4 - Events: Used to inform the audience when events are happening (ie Hour of Code, IT Workshops). Currently, WWiT has limited posts about the events in which they participate. A more effective social media approach would include:

- An event post should appear every Wednesday.
- See Figure 9 for an example.

Figure 9: Example Twitter post for the Event theme.

Theme 5 - Alumni: This theme showcases alumni successes. Currently, WWiT only references their alumni as presenters at the WWiT's annual conference. By expanding alumni coverage, it presents potential students a better understanding of their expected career outcomes. A more effective approach includes the following steps:

- An alumni post should appear every Thursday.
- See Figure 10 for an example.

Figure 10: Example Instagram post for the Alumni theme.

Theme 6 - Inform: This theme showcases testimonials and gives more information about the program (ie books to read if interested in the program). Currently, WWiT has no posts that share information about CICS or WWiT. A more effective approach includes the following steps:

- An informative post should appear every Friday.
- See Figure 11 for an example.

Figure 11: Example Instagram post for the Inform theme.

Theme 7 - Support: This theme showcases curated content by other groups or articles that support women in technology. Currently, WWiT has limited curated posts that demonstrate support for women in technology. A more effective social media approach includes the following steps:

- A support post should appear every Saturday.
- See Figure 12 for an example.

Figure 12: Example Instagram post for the Support theme.

Hashtags:

The following suggested hashtags were either created or are already prominent in the area of women or girls in technology. The hashtag #BSUWWiT was created as a way to categorize all posts from WWiT.

- **#BSUWWiT:** specific to this group's efforts
- **#WomenInTech:** celebrates and empowers women in technology
- **#GirlsCAN:** affirms that girls/women can do anything
- **#WomenInspire:** celebrates successful women
- **#WomenWhoCode:** celebrates women programmers
- **#GirlsWhoCode:** celebrates girl programmers

To breakdown each social media platform further, the following guidelines were created based on social media best practices.

Facebook
Post Frequency: 1 - 2 times per day
Communication Strategy:

- Describe a website-featured story and provide a link for theaudience to read more on the WWiT website.
- Create events on Facebook to increase the reach of the event.
- Facebook Live
    - Opportunity 1: at WWiT/CICS specific events (ie Hour of Code)
    - Opportunity 2: speakers who present to WWiT
- Sponsor promotional content as needed.

Twitter
Post Frequency: 1 - 15 times per day
Communication Strategy:

- Describe a web-featured story and a provide link for the audience to read more on the WWiT website.
- Twitter Live: Live tweet important events (ie Hour of Code, WWiT Conference).
- Quote retweets
- Mention "@" accounts when posting curated content.
- Use hashtags to engage conversations.
- Sponsor promotional content as needed.

Instagram
Post Frequency: 1 - 2 times per day
Communication Strategy:

- Instagram stories of events.
- Describe a web-featured story and provide a link for the audience to read more on the WWiT website.
- Host video content showcasing students and events.
- Mention "@" accounts.
- Use hashtags to engage conversations.
- Sponsor promotional content as needed.

YouTube
Post Frequency: 2 times per week
Communication Strategy:

- Host video content showcasing students and events.
- Upload interviews of alumni, students, faculty.

- Include promotional content featuring WWiT/CICS.
- Sponsor promotional content as needed.

Website
Post Frequency: 2 times per week
Communication Strategy:

- Host video content showcasing students and events.
- Post interviews of alumni, students, and faculty.
- Post written pieces about a featured topic or person.
- Include pictures that correspond to story topic.
- Sponsor promotional content featuring WWiT/CICS.

Live Event Strategies

Sixty-five percent of CICS students surveyed reported that live events should be used as a recruitment method. From the focus group, survey, and social media content analysis, three type of events emerged: *hands-on activities*, *open house with alumni*, and *mentorship program*.

Event 1: Hands-on Activities
Goal: Showcase potential activities CICS students are trained to complete.

This event series requires hosting technology-based workshops that would give potential students a preview of what to expect from CICS. The following example events showcase the type of activities that WWiT could host. Each example has a potential social media promotional graphic and a description of each event.

Hour of Code

December 3-9, 2018 is the 2018 Computer Science Education Week. During this week, schools and clubs host an “hour of code” event to demystify programming languages. This event demonstrates everyone’s ability to code. Which reinforces the “you can do it” theme from the focus group.

Figure 13: Example Social Media Graphic for Hands-on Activities

How to Subnet

When surveying CICS students about what they wish they would have known before starting the program, a few students listed subnetting. This would be an introductory tutorial providing attendees subnetting basics.

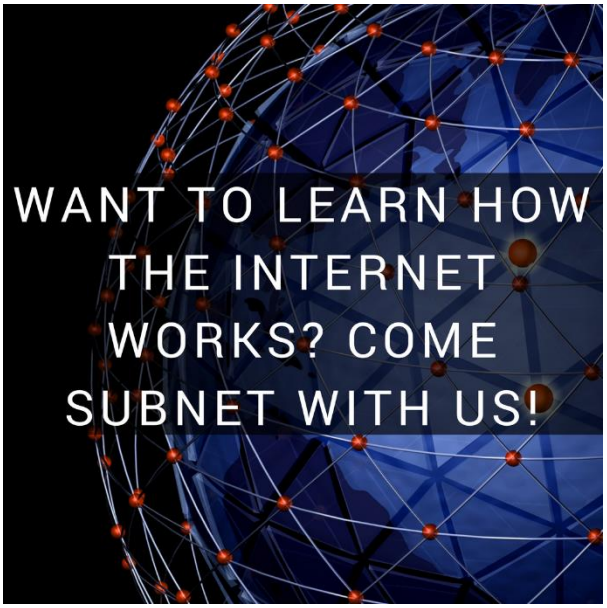

Figure 14: Example Social Media Graphic for Hands-on Activities

How to Produce a Video

Depending on the student's career choice, being able to produce short video clips is a sought-after skill. In addition to video production, this could be expanded to graphic design.

Figure 15: Example Social Media Graphic for Hands-on Activities

Event 2: Open House with Alumni
Goal: Provide opportunities for potential candidates to interact with CICS alumni and hear their success stories.

This event series would allow potential students to interact with CICS alumni. The following example events showcase the type of activities that WWiT could host. Each example has a potential social media promotional graphic and a description of each event.

Career Exploration with Alumni

This event would show potential students the type of opportunities they can expect after graduating with a degree from CICS. This also provides them with a chance to interact with alumni, giving these potential students models for success.

Figure 16: Example Social Media Graphic for Career Exploration with Alumni

Etiquette dinners with Alumni

This event would allow potential students to learn how to interact during a formal dinner with other professionals. This event would also provide students an opportunity to receive career advice and hear stories of success from CICS alumni.

Figure 17: Example Social Media Graphic for Career Exploration with Alumni

Event 3: Mentorship Program

Goal: Recruiting successful women in technology to provide support and share how CICS has led to their career success.

This event would allow students to be mentored by successful women in technology. The following example events showcase the type of activities that WWiT could host. Each example has a potential social media promotional graphic and a description of each event.

Luncheons

By having luncheons with success women in technology, students will be able to see the "faces of women," which was a theme identified by the focus group. By learning about the different paths and experiences, potential female students could develop a model for being successful.

Figure 18: Example Social Media Graphic for Mentorship Program

Ted Talks style information sessions

Hosting female professionals delivering "talks" would feature women who are successful in their careers. By using testimonials, potential students can be supported in their decision to apply for CICS.

Figure 19: Example Social Media Graphic for Mentorship Program

Future Considerations

The following points are suggestions that WWiT should investigate further to develop the group and the type of support it can give to the women in STEM community.

- Partner with different STEM related groups and organizations on campus to increase the reach of this group.
- Host panels of successful women from CICS inviting the campus and off campus community.
- Host networking events including potential candidates, current students, alumni, and job recruiters to showcase possible careers after graduating CICS.
- Update the WWiT website to include resources, testimonials, students' successes, and showcasing the different paths in technology and STEM.
- Grow the mentorship program on the campus and in the local community to provide support to young women.
- Engage male allies in all of the recruiting activities.

Chapter 5: Discussion/Conclusion

Two guiding questions drove the development of the transmedia recruitment plan outlined in Chapter 4: 1) How might we recruit more women into STEM programs like CICS? and 2) How might we create a replicable transmedia recruitment plan that encourages women to pursue STEM graduate programs and fields? To determine the importance and the potential merit of this plan, three current CICS students were interviewed to solicit feedback about their reactions to the plan. The following sections discuss feedback from current CICS students, the overall merit of the plan, and a measurement for understanding the plan's success.

CICS student feedback

Feedback about the plan outlined in Chapter 4 was solicited from current CICS students to better understand: 1) the value of the document, 2) potential improvements that could be used to increase recruitment of female applicants, 3) potential deficiencies in the plan, 4) and a comparison of the current recruiting procedures with the new plan proposed in Chapter 4. One student participant is the social media chair for the WWiT, one is a general member of WWiT, and one does not currently participate in WWiT.

When asked about the value of this document, the respondents indicated that the constructed strategy represents an effective social media presence. According to one interviewee: "This is a good idea for future social media chairs, so that they know what they should be posting." The students also agreed that the plan facilitates consistent messaging across multiple social media accounts. One student stated that, "when there is not a specific content plan, it feels that the content producers do not prioritize making posting deadlines." When deadlines are not prioritized, it causes less content to be posted.

Participants also indicated that the social media content posting calendar is quite valuable. One student felt that the calendar would encourage WWiT's social media coordinator to post content more often and keep the group more relevant. All the students' felt this calendar was a helpful tool that would improve the consistence of WWiT's social media by providing a structure on type of content and when to post.

The respondents also agreed that this plan would improve recruitment efforts of WWiT by widening the reach and frequency of the posts. One student believed that this plan provides a method to be successful online by providing frequent, valuable social media content. Another student said that the content proposed in this plan would make WWiT more relevant to undergraduates and therefore a better basis for recruitment.

The only deficiency respondents found with the plan is that it would require a great deal of time to implement and maintain. Two of the three students indicated that this plan might be unrealistic for one volunteer to accomplish. Thus, one key recommendation for the implementation of this campaign is to appoint either a dedicated graduate assistantship or a team of volunteers who could share in content creation.

Currently, there is no specific standard procedure for WWiT's social media. The group typically makes two posts per weeks with content about either WWiT's conference or news articles. One student stated that WWiT and CICS are not being successful with their social media due to the limited number of posts per week. By introducing a plan, that increases the frequency and relevancy of posts, potential recruits might envision a holistic picture of what being a women in STEM would look like. One student also noted their excitement about the plan's use of live events as a mechanism to recruitment women. One of the participants discussed a recent

conversation with the group's advisor, Kirsten Smith, in which they were encouraging the development of live events to promote WWiT in the Ball State community.

Why is this project important?

According to Accenture, the United State will have 2.4 million unfilled STEM jobs in 2018. Likewise, women join STEM at significantly lower rates due to the perceived masculine culture that perpetuates gender biases and limits in role models and early exposure. Many organizations have developed their own solutions to shortages of women in STEM, but with so many solutions available, it is difficult to know which one is most effective. This project focused on providing WWiT the means to recruit and encourage more women into technology by creating a replicable transmedia recruitment plan to bring more female applicants to CICS.

To measure the success of the plan, two types of testing are necessary. First, WWiT should engage in an analysis of its current social media insights and website analytics for the past year. Then, WWiT should implement the plan for an equivalent time period and run a comparison analysis to determine the plan's effectiveness. The second testing, to validate replicability, would require a different STEM organization to implement the proposed plan to determine whether results are similar across unrelated groups based on the social media insights, website analytics, and the number of females who gain interest in STEM.

This project is important for its contribution to the STEMinist movement. To increase women's representation from 24% to the proposed 39% will require academic programs and organizations to spread their reach and bring women into the fold. This project aimed to engage women in transmedia experiences and create a recruitment tool. Through insight and strategic

implementation of a recruitment plan, projected applicant shortfalls will disappear while many more women will join STEM fields.

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Appendix - External Reviewers

Dear Michelle Shaw:

Thank you for agreeing to serve as an outside evaluator for the creative project of Kylie Leonard, who is completing a master's degree in Emerging Media Design & Development. This evaluation is required as the final step in approval and completion of her creative project. For this evaluation, we ask that you answer the following questions and provide brief comments in support of your answers. If you have additional questions about this process, please feel free to contact EMDD Director Jennifer Palilonis at jageorge2@bsu.edu.

Name: Michelle Shaw

Title: Consultant

Organization: Luetschine Consulting and Trust Equity Consulting

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Tick one of the following boxes	Excellent	Good	Poor
Please rate how well the student articulated the problem space defined for this project.	x		
Please rate the quality of the design solution developed to address the problem space.		X	
Please rate how well the objectives of the project's stated design have been met.		X	
Please rate the extent to which the project makes a significant contribution to its genre.		X	

Project Design and Concept

Please provide brief comments about the overall quality of the project design and concept.

- The topic is of interest to me because I am directly involved in the WWiT Conference each year as part of the planning committee. And, I am also a CICS graduate.
- The problem space was articulated clearly, and the design solution to address the problem space was well-rounded overall.
- I am rating most of the areas as "good" rather than "excellent" because at times the solution was difficult to follow while reading the document. Given the document length (30 pages) it would have been nice to have a stronger introduction and conclusion at the

beginning and end in bullet point format or other format to give a summary, and with the summary, reinforce why the topic is so important. Even including a stronger summary per section with what you are going to provide and why it is relevant and important to the topic would be helpful for the reader.

Tick one of the following boxes	Excellent	Good	Poor
Please rate the overall quality of the writing associated with the project.	x		
Please rate the extent to which the literature review demonstrates a critical understanding of the relevant background literature for the creative project.	x		
Please rate the degree to which the writing involved meets the expectations of the field and/or genre.	x		
Please rate the overall quality of the research conducted for this project.		x	

Research and Writing

Please provide brief comments about the overall quality of the research and writing.

- It is clear that the project task, subject matter, and genre are clearly understood, so these are rated at “excellent” in my review.
- The research is rated as “good” for the following reasons: o The focus group of 12 professional women is a very small.
    - The survey with 34 students is also very small.
    - Including some statistics of girls / women in technology would be a nice attention grabber in the project. Identifying upward trends of women in technology and how the trends are impacted by conferences like WWiT and programs like CICS would also be useful. As an example data point, we have upward trends in both WWiT and CICS for women participation since the inception of both programs, so that could be a starting point for the research that could be compared to national and even international trends.
    - For the recommendations, it would be good to include research on expected outcomes if the recommendations are implemented.
    - Also, for the recommendations, it would be good to include research on what platforms provide the best results for organizations similar to WWiT and CICS as a point of reference for implementing the recommendations.

- As a side note, you might want to consider a legend of the "Themes" in "Figure 5: Calendar of when and what to post on each medium" because you never want to make assumptions that the reader will always know what is being referenced.

Graphic Design and/or Project Presentation

Tick one of the following boxes	Excellent	Good	Poor
Please rate the overall graphic design and/or presentation quality displayed in the project.	x		
Please rate the execution of the project.		x	

Please provide brief comments about the overall quality of the project design and concept.

- I enjoyed reading the project and gaining insight into some creative ideas on how we can expand interest for girls and women in technology.
- Well done, and good luck!

Dear Steve Jones:

Thank you for agreeing to serve as an outside evaluator for the creative project of Kylie Leonard, who is completing a master's degree in Emerging Media Design & Development. This evaluation is required as the final step in approval and completion of her creative project. For this evaluation, we ask that you answer the following questions and provide brief comments in support of your answers. If you have additional questions about this process, please feel free to contact EMDD Director Jennifer Palilonis at jageorge2@bsu.edu.

Name: Steve Jones

Title: Professor

Organization: CICS Professor

Project Design and Concept

Tick one of the following boxes	Excellent	Good	Poor
Please rate how well the student articulated the problem space defined for this project.	x		
Please rate the quality of the design solution developed to address the problem space.		X	
Please rate how well the objectives of the project's stated design have been met.		X	
Please rate the extent to which the project makes a significant contribution to its genre.		X	

Please provide brief comments about the overall quality of the project design and concept.

Concept is great and good understanding of the challenges of 'getting the message' out to young women to engage in technology. The challenge is that all the recommendations (which are spot on!) would require at a minimum a part-time professional's focus to collect and deliver the content. The scope of the deliverables is outside of the current fiscal climate in higher education. I wish for the resources to make this happen.

Research and Writing

Tick one of the following boxes	Excellent	Good	Poor
Please rate the overall quality of the writing associated with the project.		x	
Please rate the extent to which the literature review demonstrates a critical understanding of the relevant background literature for the creative project.		x	
Please rate the degree to which the writing involved meets the expectations of the field and/or genre.		x	
Please rate the overall quality of the research conducted for this project.		x	

Please provide brief comments about the overall quality of the research and writing.

Good work. For something to be considered "excellent" at the graduate level, I would expect to see material delivered that is accepted at national conference or industry journal related to the field for publication/presentation. Please know that I am overly-critical in this regard as this is the standard I hold my graduates to when submitting papers.

Graphic Design and/or Project Presentation

Tick one of the following boxes	Excellent	Good	Poor
Please rate the overall graphic design and/or presentation quality displayed in the project.	x		
Please rate the execution of the project.	x		

Please provide brief comments about the overall quality of the project design and concept.